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VI.—DESCRIPTIONS OF NEW OR LITTLE KNOWN
PHANEROGAMS, CHIEFLY FROM OAXACA.

Discorea composita, Hemsl. Mr. E. W. Nelson has rediscovered this species at Santa Efigenia, Oaxaca, altitude 500 feet, 18 July, 1895, no. 2828, and also between Topana, Oaxaca, and Tonala, Chiapas, altitude 200 to 500 feet, 1 to 3 August, 1895, no. 2855. The specimens from Santa Efigenia represent the hitherto unknown staminate plant from which the following supplementary characters are derived: foliage and inflorescence of the ♂ plant as in ♀: segments of perianth 6, oblong, obtuse; the inner slightly larger: stamens 6, all perfect, free from each other and borne upon the base of the perianth-segments, the three opposite the outer segments a little shorter than the others: filaments not noticeably rigid nor flattened, considerably exceeding the very short anthers: the interior of the flower containing a conical rudimentary ovary.

Habenaria subauriculata. Glabrous, 5 to 10 inches high: tuberiform root single, ovoid, an inch long: stem flexuous, leafy: leaves ovate, acutish or acute, 3-ribbed, sheathing by the slightly narrowed base, 1 to 1½ inches long, a third or half as broad: spike 2 to 6 inches long, several—many-flowered: bracts ovate-lanceolate, acuminate, about equalling the ovary: flowers green: upper sepals 3-nerved, about 3 lines long, obtusish, the upper broadly ovate, galeate, obtusish, 3-nerved, 3 lines long; the lateral ones narrowly ovate, obtusish, slightly exceeding the upper one: lateral petals linear-oblong, obtusish, slightly falcate, subauriculate on the lower side at the base, otherwise entire, 2 to 2½ lines long; labellum deeply 3-parted, the divisions linear, the lateral divaricately spreading and slightly curved upwards, 2½ to 3 lines long, about equalling the middle lobe: spur slender, scarcely clavate, green, about 4 lines long.—Collected by C. G. Pringle, on grassy slopes, Las Sedas, Oaxaca, altitude 6,000 feet, August, 1894, no. 4830. Habit of *H. flexuosa*, Lindl., and *H. clypeata*, Lindl., but with lateral petals undivided.

Spiranthes Oaxacana. Glabrous (except flowers): root a fascicle of numerous thickened tuberiform fibres: stem erect, a foot to a foot and a half high bearing 1 or 2 foliar leaves at the base and loosely sheathed for the rest of its length by membranaceous striate-veiny ovate-acuminate bracts: leaves oblong, 3 inches or more in length, three fourths inch in breadth, sheathing at the narrowed base, scarcely persisting until the perfecting of the flowers: flowers in a dense ovate subcapitate spike, slightly exceeding the conspicuous ovate-acuminate

silvery diaphanous brown-veined bracts: sepals finely pubescent on the outer surface; the lateral sepals linear-oblong, 6 lines in length, obtuse, 3-nerved, not fleshy; the dorsal one ovate-lanceolate, obtusish, about the same length: petals linear-oblong, obtusish, 3-nerved, about equalling the sepals; labellum long-unguiculate; lamina oblong, 5 lines in length (about equalling or slightly exceeding the claw), $3\frac{1}{2}$ lines broad, with a median lance-shaped callous thickening just above the thickish claw; the latter involute on the margin and somewhat sulcate above. — Collected by C. G. Pringle, on hills above San Felipe, Oaxaca, altitude 6,000 feet, 31 December, 1894, no. 6101.

Cranichis thysanochila. Glabrous throughout, 6 to 8 inches high: roots several, elongated, thick, tuberiform, obtuse, covered with fine short rootlets: leaves basal, ovate, acute, thin, smooth, $1\frac{1}{2}$ to 3 inches long, half to two thirds as broad, subsessile; the contracted base membranous, amplexicaul: stem slender, flexuous, bearing about 5 lanceolate attenuate sheathing green bracts: spike 2 to 4 inches in length, only moderately dense: floral bracts ovate-lanceolate, sharply acuminate, green, 3 lines in length, about equalling the ovary: flowers spreading, nearly half inch in length: floral envelopes white; sepals oblong, obtuse, 1-nerved, subequal, about 2 lines in length; lateral petals broadly spatulate or narrowly obovate, obtuse, 1-nerved, about equalling the sepals in length; lip superior, obovate, cuneate, short-clawed, biauriculate at the base, terminated at the apex by an emarginate and fimbriated appendage; the inner surface longitudinally somewhat 2-crested. — Collected by C. G. Pringle, on calcareous banks, Las Hoyas Cañon, Oaxaca, altitude 4,500 feet, 2 November, 1894, no. 6023. This species differs from others of the genus in the fringed apex of the lip.

Microstylis platyglossa. Erect, a foot high, glabrous, 1-leaved: bulb three fourths inch in diameter: sheath subsolitary, short, obtuse: leaf oval, amplexicaul at the subcordate base and rounded or very obtuse at the apex, $1\frac{3}{4}$ to $2\frac{1}{2}$ inches long, 15 to 18 lines broad: peduncles about 2 inches long; racemes 6 to 8 inches long, bracts ovate, acute, a third to half as long as the slender pedicels, these nearly horizontal, $1\frac{1}{2}$ lines long: flower purple (the labellum sometimes lighter colored), inverted by the torsion of the pedicels, bringing the labellum downward: sepals oblong, obtuse, 1-nerved, about a line long, the upper odd one erect, the lower pair reflexed: lateral petals linear, reflexed; labellum broadly deltoid, one third broader than long, obtuse, about a line in length, dark purple or yellow (both colors sometimes occurring on the same specimen). — Collected by C. G. Pringle, on the Sierra de San Felipe, Oaxaca,

altitude about 10,000 feet, August, 1894, nos. 5614, 5614 a, and by E. W. Nelson, in the same locality, no. 1140.

Microstylis streptopetala. Slender, 6 to 18 inches high, 1-leaved: bulb oval, half inch in diameter; sheaths 2, closely surrounding the base of the stem, obtuse: leaf elliptic-oblong, cuneate at the amplexicaul base, acutish or obtuse at the apex, $1\frac{1}{2}$ to 3 inches long, 4 to 8 lines broad: naked and angled peduncle about equaling the stem (2 to 4 inches in length): spicate inflorescence strict, slender, 2 to 8 inches long, 2 to 3 lines in thickness, very densely flowered above but looser below: bracts very short ovate-deltoid, obtusish: flowers sessile: sepals 3-nerved, green, oblong, obtuse, the upper somewhat falcately incurved, $1\frac{1}{2}$ lines long, green; lower 2 lines long: lateral petals linear, spirally coiled or twisted, greenish white; labellum deltoid, strongly auriculate, minutely 3-toothed at the apex, half as long as the upper sepals, in dried state nearly black; margins somewhat thickened and slightly incurved; auricles oblong and obtuse.—Collected in flower by C. G. Pringle on dry pine ridges, Sierra de San Felipe, Oaxaca, at 9,000 to 10,000 feet altitude, 30 July, 1894, no. 4808. Most nearly related to *M. montana*, Roth, but with very different lip.

Phoradendron Forestieræ. Glabrous throughout: branches terete, olive-green; branchlets ancipital: leaves narrowly oblong, with rounded apex and cuneately narrowed base, sessile, 1-nerved, or very obscurely 3-nerved, yellowish green, inch to inch and a half long, $1\frac{1}{2}$ to $2\frac{1}{2}$ lines wide: inflorescences of ♀ plant axillary, solitary, opposite, moniliform, 5 to 9 lines in length, flowers in 1 to 4 globular 10-12-flowered clusters, becoming deeply imbedded in the substance of the nodular rhachis; the clusters $2\frac{1}{2}$ lines in diameter, tawny in color; the intervening necks 1 to $1\frac{1}{2}$ lines long, about half enveloped in a loose sheath; the margins of the sockets holding the flowers finely ciliolate: divisions of the perianth 3 (rarely 4), deltoid, the free portion not a third of a line in length.—Collected by C. G. Pringle on hills between Tehuacan and Esperanza, Puebla, altitude 6,000 feet, 23 December, 1895, no. 6290. A species parasitic on *Forestiera*, and apparently most nearly related to *P. brachystachyum*, Oliv., which, however, is tomentulose on the branchlets, has simple not moniliform inflorescences, and larger more distinctly veined leaves.

Euphorbia Luciismithii. Tall branching tomentulose glaucous shrub, 10 to 15 feet in height: branches subterete, striate: leaves verticillate, 2-5-nate, elliptical, obtuse at both ends or subacute at the base, glabrous or glabrate above, paler and soft grayish-tomentulose beneath,

10 to 16 lines long, a third to half inch broad: petioles 4 to 6 lines long, tomentulose: cymes compound, terminal, flat-topped, leafy: floral leaves oblanceolate, cuneate, mucronulate, 1-nerved, white or rarely red, about 3 lines in length, a line in breadth: involucres campanulate, puberulent, nearly sessile; lobes 5, fimbriated; glands 5, oblong; appendages oblong or subrotund, undulate, white, three fourths line long: capsules 3-lobed, nearly 3 lines long, glabrous seeds ashy, oblong, somewhat 4-angled, faces rugulose and marked with fine irregular brown lines. — Collected by Lucius C. Smith, at Rancho de Calderon, altitude 5,500 feet, 13 August, 1894, no. 181; also at Jaycatlan, altitude 4,300 feet, 10 September and 4 November, 1894, no. 182; also by C. G. Pringle, in rocky gulches, Monte Alban, Oaxaca, altitude 5,800 feet, 14 September and 27 November, 1894, no. 4903, and by E. W. Nelson, six miles above Dominguillo, altitude 4,500 to 5,500 feet, 30 October, 1894, no. 1880. Most nearly related to *E. leucocephala*, Lotsy, from which it differs in pubescence and form of appendages.

Euphorbia Oaxacana. Stems subterete, 2 to 5 feet high, green, rather densely pubescent near the summit, soon glabrate: leaves alternate, ovate-elliptic, entire, thin, obtuse at each end, appressed-villous on both sides and ciliated, 10 to 16 lines long, half as broad; slender soft-pubescent petioles becoming half inch in length: inflorescence a long narrow compound somewhat secund naked panicle: its leafless branches alternate, 1 to 3 inches in length, again branched and rather densely flowered, tomentose; buds roseate, tomentose: involucres in subcapitate peduncled cymes, white-tomentose as well as the short (1 to 1½ lines) linear-spatulate branchlets; glands 5, equal, oblong, with white subrotund or oblong 2-3-crenulate appendages (about a line long); involucral lobes fimbriate, green: styles deeply 2-parted; capsule green, glabrous, 1½ lines in diameter: seeds oval, ashy, faveolate. — Collected by C. G. Pringle, on ledges, Monte Alban, Oaxaca, altitude 5,800 feet, 23 November, 1894, no. 6070.

Euphorbia subcærulea. Erect much branched annual, glabrous throughout, 2 feet in height: stem and slender branches terete, striate, livid: leaves elliptic-ovate, entire, thin, green above, a little paler and glaucous beneath, rounded or very obtuse at the base, rounded or retuse at the apex, 3 to 8 lines long, nearly two thirds as broad: petioles filiform, nearly equaling the leaves: inflorescences open cymose-paniculate: floral leaves very small, elliptic-ovate to subrotund, subsessile, white or bluish: involucres (including appendages) 1½ lines in diameter; glands 5, oblong, sessile, with suborbicular entire appendages, these at

first light blue, then changing to white, half line in diameter, spreading: stigmas deeply 2-parted; divisions clavellate: capsule smooth, about a line in diameter: seeds oblong, light blue, three fourths line in length, deeply pitted and with a conspicuous caruncle. — Collected by C. G. Pringle, on dry banks, Tomellin Cañon, Oaxaca, altitude 3,500 feet, 9 December, 1895, no. 6265.

Cardiospermum Galapageium. A slender climber with furrowed tomentulose stem and biennate leaves: leaflets oblong-lanceolate, attenuate, entire, abrupt at base, finely tomentose upon both surfaces, slightly paler beneath, prominently 1-nerved and pinnately veined, the lateral leaflets of each division much smaller than the terminal: peduncles slender, spreading, tendrilliferous beneath the umbelliform inflorescence: sepals 4, the outer pair a line, the inner 2 lines long: glands upon the upper side of the disk short, rounded, not at all cornute. — *C. Corindum*, Rob. & Greenm. Am. Jour. Sci. ser. 3, L. 145, in part, not L. — Collected in the southern part of Albemarle Island, July, 1891, by Dr. G. Baur, no. 61. Distinguished by its narrow entire leaflets. *C. integerimum*, Radlk., the only other species with similar foliage, known to the writers, has a 5-sepaled calyx and cornute glands.

Erythræa retusa. Erect glabrous annual, 6 or 8 inches in height: stem leafy, 4-angled, branched; branches erect or nearly so, mostly rather short and again branched: leaves oblong-elliptical, obtuse or mucronulate at the end, somewhat narrowed at the base, half inch long, 2 to 3 lines broad, the uppermost narrower and lanceolate: pedicels both terminal and lateral on the branches, short, 1 to 2 lines in length: flowers 4-merous, calyx-lobes lance-linear, attenuate, slightly carinate, 2 lines in length, green with narrow scarious diaphanous margins: corolla-lobes oblong, retuse, a line long, pale yellow in a dried state: fruit dark brown, $2\frac{1}{2}$ lines long. — Collected by C. G. Pringle, in springy meadows, Sierra de San Felipe, Oaxaca, altitude 7,500 feet, 11 December, 1895, no. 6300. This species differs from *E. divaricata*, Schaffner, in its much shorter pedicels and erect not widely spreading branches; from *E. tetramera*, Schiede, in its retuse by no means acute corolla-lobes: from *E. stricta*, Schiede, in its 4-merous flowers. The flowers are small and appear to remain closed and to be cleistogamous.

Nama Pringlei. Low slender branching annual of similar habit to the following and with similar pubescence: leaves oblong, entire, rounded at the apex, rather gradually narrowed at the base to a short slender petiole: calyx as in the last: corolla showy, 5 lines long and equally broad, with short yellow tube and deep blue spreading rather deeply 5-lobed

limb: styles a line long: capsule rugose, broadly ovate with depressed summit.—Collected by C. G. Pringle, on hills near Tehuacan, Puebla, altitude 5,500 feet, 24 December, 1895, no. 6286. A very attractive species, nearly related to *N. latifolium*, Gray, but with much longer calyx and larger corolla as well as different pubescence.

Nama Pueblense. Slender weak dichotomously branched annual, 3 to 6 inches high, spreading-pubescent: leaves ovate, obtuse, entire, thin, 10 to 12 lines long, half as broad, rather abruptly contracted to a slender petiole and covered on both surfaces with fine sub-appressed hairs with globular bases; and below with short golden yellow pedicelled glands: flowers short-pedicelled, grouped by 2's or 3's near the axils or extra-axillary and solitary somewhat above the fork of the terete purplish stem: calyx-lobes in fruit 4 lines in length, spatulate, densely hirsutulous with spreading white hairs: corolla small, pale blue (in dried specimen), tubular, with scarcely amplified shortly 5-lobed limb, 2 to 2½ lines long: styles half line in length: capsule narrowly oblong, hispidulous near the apex, rugose, about 2 lines in length, obtusish: seeds brownish, rugose.—Collected by C. G. Pringle, on hills near Tehuacan, Puebla, altitude 5,500 feet, 24 December, 1895, no. 6287. Habitually near to *N. latifolium*, Gray, but differing in its much longer more hirsute calyx, narrower capsule, and having leaves evenly pubescent over the entire surface instead of chiefly on the veins.

Berendtia levigata. Shrub 2 to 3 feet high, glabrous but somewhat vernicose especially upon some of the younger parts: stems and branches covered with a gray bark; branchlets very leafy especially at the ends: leaves rather broadly lanceolate or oblanceolate, sharply few-toothed above the middle and acute, cuneate to an entire short-petioled base, glabrous or (under a lens) slightly pulverulent but green on both surfaces and sometimes a little lucid, of firm texture, 1¼ to 1½ inches long, half as broad: peduncles opposite in the upper axils, 1-flowered, bracteolate at or below the middle, the bracteoles bearing rudimentary buds in their axils: calyx strongly prismatic, as in *Mimulus*, 6 lines in length, with 5 short broad subequal acuminate-mucronate teeth: corolla showy, much exserted, 1½ inches in length; throat rather gradually amplified, orange with crimson spots; limb patulous, of broad rounded lobes: stamens scarcely exserted: capsule 6 lines in length.—Collected by C. G. Pringle, on calcareous hills near Tehuacan, Puebla, altitude 5,500 feet, 24 December, 1895, no. 6294.

Castilleia aurea. Slender annual of § *Epichroma*, a foot high, with terete glabrous flexuous branched stems and delicate pectinate

foliage: leaves inch to inch and a half long, with 6 to 9 filiform-linear segments and narrow rhachis: flowers 9 lines in length, in long rather dense puberulent racemes; lower bracts much like the leaves, the upper gradually reduced to small lanceolate or subulate scales; pedicels erect, slender, 2 to 4 lines long: calyx funnel-form, gradually and considerably amplified, with broad orifice oblique, scarcely split ventrally and not at all dorsally, about half inch in length, golden yellow: corolla concolorous, about 9 lines in length, puberulent upon the considerably exserted galea: capsule ovate-oblong, acutish, 3 lines in length.—Collected by C. G. Pringle, on wet bluffs of barrancas above Cuernavaca, State of Morelos, altitude 7,000 feet, 19 November, 1895, no. 6204. Nearly related to *C. tenuifolia*, Mart. & Gal., and *C. gracilis*, Benth., but distinguished from the former by its yellow flowers, more dense and continuous inflorescence, narrower acuter capsule, and smaller seeds; from the latter by the color of the flowers and much more exserted galea, denser racemes, etc.

Carlowrightia glandulosa. Low much branched shrub, 1 to 3 feet in height, densely glandular-tomentose and viscid: cortex of the older branches pale gray: leaves ovate, acute, entire, cordate, soft-pubescent upon both surfaces, the larger ones 12 to 15 lines in length, three fourths as broad, the floral ovate-lanceolate to lanceolate, half inch in length, somewhat acute at the base: petioles nearly or quite half the length of the leaf: flowers 1 to 4 in the opposite axils, closely sessile: calyx-tube very short, divisions narrowly linear-attenuate, 3 lines in length, glandular-pubescent: corolla bluish, 4-parted; the emarginate posterior lobe purple-veined and marked with yellow at the centre; tube 2 lines long; lobes 4 to 5 lines in length: capsule glabrous and lucid, three fourths inch long, with pungent tip, seeds orbicular, dark brown with lighter colored margin, $2\frac{1}{2}$ lines in diameter.—Collected by C. G. Pringle at Monte Alban, near Oaxaca, altitude 5,500 feet, 5 December, 1895, no. 6276. This species is nearest *C. pubens*, Gray, but differs from it most obviously in its cordate and considerably larger lower leaves, as well as larger flowers and seeds.

Carlowrightia (?) Pringlei. Shrub, 3 to 5 feet high, with slender glabrous terete stems covered with smooth grayish brown cortex: leaves ovate-lanceolate, acute, entire, rounded at the base, glabrous on both surfaces or minutely strigillose on the veins beneath, 8 to 12 lines long, a third as broad; petioles a fourth inch long, glabrous but often with a tuft of white hairs at the base within: floriferous branches slender, recurved: flowers sessile, secund, solitary or 2 together in the same axil, the opposite axil being empty: bracts small, subulate: calyx-tube very short;

segments 5, linear-attenuate, glandular-pubescent, $1\frac{1}{2}$ lines long: corolla bluish white (in dried specimen): tube slender, 4 to 6 lines long, about equalling the 4 lobes: anther-cells equal and subcontiguous, muticous: capsule glabrous, half inch in length. — Collected by C. G. Pringle, dry slopes, Tomellin Cañon, Oaxaca, altitude 3,500 feet, 30 November, 1895, no. 6261. A plant which with about equal propriety might be referred to *Dianthera*.

Jacobinia candidans, Benth. & Hook. f. "Gen. ii. 1115" according to Hook. f. & Jacks. Ind. Kew. i. 1246. *Dianthera candidans*, Benth. & Hook. f. "Gen. ii. 1113" according to Hemsl. Biol. Cent.-Am. Bot. ii. 517. *Adhatoda candidans*, Nees in DC. Prodr. xi. 396. *Jacobinia Mexicana*, Hemsl. l. c. 521, as to plants of *Galeotti* and of *Liebmamn*. Excellent and copious material of this doubtful plant has now come to hand from the following sources. Vicinity of Cuicatlán, Oaxaca, altitude 1,800 to 2,500 feet, E. W. Nelson, no. 1698, and in same locality V. González, no. 48; also in Tomellin Cañon, altitude 2,500 feet, C. G. Pringle, nos. 5638, 6260. The plant is a shrub 3 to 5 feet high with the whole habit and inflorescence as well as corolla of *Jacobinia*, to which it would seem best to refer it notwithstanding its slightly disjoined anther cells. Indeed the very close habitual resemblance between this species and *Jacobinia Mexicana* has led to a confusion of the two for Mr. Hemsley in the places cited ascribes Galeotti's no. 911 both to *Dianthera candidans* and *Jacobinia Mexicana*. The plants of recent collection mentioned above correspond in all points to Liebmamn's specimen from Tehuacan, and differ much in calyx and bracts from Seemann's plant of N. W. Mexico. In the latter plant (*J. Mexicana*, Seem.) the bracts are minute, much shorter than the 5-toothed calyx. In the former (*J. candidans*) the bracts about equal the calyx and this is much more deeply 5-cleft. The corolla of *J. candidans* is bright scarlet rather than purple as described by Nees.

Oldenlandia xestosperma. Erect glabrous perennial, several-stemmed from a slightly ligneous base: stems terete, moderately branched above, 1 to 2 feet high: leaves linear, 1-nerved, an inch to an inch and three fourths in length, less than a line in breadth: inflorescences terminal few-flowered cymes; bracts small, subulate; pedicels filiform, 1 to 3 lines in length: flowers strongly heterogone-dimorphous: calyx-lobes in anthesis but half line long, subulate, about equalling the tube: corolla purplish, nigrescent in drying, 4 lines in length, gradually widened from the base; limb of 4 triangular erect teeth: capsule obovate, 2 lines in length, entirely inferior, dehiscing to the base: seeds slightly angled,

light colored, yellowish, highly polished and shining, half line or less in diameter.—Collected by C. G. Pringle in open glades, Sierra de San Felipe, Oaxaca, altitude 8,000 feet, June, 1894, no. 4692. Habit of *Houstonia purpurea*, var. *tenuifolia*.

Eupatorium eriocarpum. Stem tall, 5 to 8 feet in height; branches glabrate, angled, lucid, yellowish brown; branchlets puberulent but soon glabrate: leaves opposite, ovate or rhombic ovate, crenate-serrate, acuminate to an obtusish apex, cuneate or rather abruptly contracted at the mostly unequal-sided base, glabrous on both surfaces except on the veins and at their axils, 2 to 3 inches in length, a third to half as broad, neither coriaceous nor rugose, scarcely paler beneath, pinnately veined; petioles 2 to 3 lines long: thyrsoid inflorescences terminal on the upper branchlets and together forming large ovate leafy panicles; slender peduncles and short pedicels often nodding, covered with fine and somewhat sordid pubescence: heads mostly 5-flowered, 5 to 6 lines in length: scales of the involucre ovate to ovate-oblong, obtuse, finely striate, ciliolate, imbricated in 3 or 4 series: corolla-tube slender, $2\frac{1}{4}$ lines in length, larger at the base than at the summit, without any apparent throat; teeth very short: style branches dark colored, strongly clavate: achenes turbinate, so densely covered with white woolly or silky pubescence as to obscure their 5 angles, about 2 lines in length, narrowed at the base to a glabrous callous and somewhat pungent lip; pappus-bristles white, slightly exceeding the achene, about 50 in number.—Collected by C. G. Pringle, in Tomellin Cañon, Oaxaca, altitude 3,000 feet, 22 December, 1894, no. 6112.

Eupatorium rupicola. Shrub, 5 to 10 feet in height: branchlets reddish brown, terete, finely and densely fuscous-puberulent: leaves opposite, petiolate, ovate, acuminate, crenate-serrate, 3-nerved, rounded or obtusish at the base, green and sparingly puberulent or glabrate above, paler and grayish-tomentulose beneath, 14 to 18 lines long, 7 to 12 lines broad; petioles reddish, puberulent, 3 lines long: inflorescences 6-10-headed flat-topped umbelliform corymbs terminating short opposite lateral and terminal branchlets (1 to 2 inches in length), and together forming more or less elongated leafy panicles; pedicels densely pubescent, ascending, 2 to 4 lines long, subtended at the base by very reduced leaves and often bearing one or more short subulate bractlets: heads $3\frac{1}{2}$ to 4 lines in height; involucre relatively short, imbricated in about 2 series; scales 10 to 15, subequal, $1\frac{1}{2}$ lines in length, oblong, acutish, puberulent; flowers about 16, purplish white: corolla $2\frac{3}{4}$ -3 lines, gradually enlarged upward: achenes linear, a little over a line in length, rather densely white-pubes-

cent. — Collected by C. G. Pringle on dry ledges of the Sierra de San Felipe, Oaxaca, altitude 7,500 feet, 9 October, 1894, no. 4970.

Chrysopsis Brandegeei. Low villous perennial, 3 to 5 inches high, with spreading branched scaly rootstock and numerous densely tufted stems: leaves spatulate, entire, gradually narrowed below into slender petioles, rounded at the summit but mucronate-acuminate at the very apex, 1-nerved, finely grayish-pubescent and covered with very short yellowish glandular or resinous-tipped hairs (so short as to appear when viewed from above merely as sessile globules), and spreading-villous on the edges, 7 or 8 lines long including the petioles; lowest leaves shorter, densely crowded at the base, and often canescent with more appressed pubescence: peduncles terminal, slender, erect, flexuous, terete, 1½ to 2 inches long, villous with spreading hairs and also closely covered with the minute glandular hairs, entirely leafless but sometimes bearing one or two short filiform bracts: heads solitary, discoid, 6 to 8 lines in diameter, half inch in height, 40–45-flowered: scales of the involucre very unequal, imbricated in about 4 series; the outer ones very small, a line in length, very villous, the inner oblong, purplish, rather abruptly but acutely pointed, flat and smoothish, ciliolate on the margin, 3½ lines long, half to two thirds line broad: corollas 5-toothed, golden yellow, glabrous, 4 lines long: pappus manifestly double, the outer bristles very unequal: stigmas sometimes 3: achenes (immature) densely silky-villous, about a line long. — *Chrysopsis* sp., Brandegee, Zoe, iv. 206. — Collected by T. S. Brandegee at San Pedro Martir, Northern Lower California, May, 1893.

Bigelowia pyramidata. Shrub, 2 to 3 feet high, much branched: branches white-woolly; branchlets striate: leaves fascicled, linear-acute, entire, somewhat pungent, white-woolly beneath, strongly revolute at the margins, pale green and grooved above, 4 to 14 lines long, half line in breadth: inflorescences terminal pyramidal panicles: heads small, numerous, sessile or subsessile, spicately arranged along the spreading-ascending branches, subtended by fascicles of short spreading pungent leaves, discoid, few (5–7)-flowered: scales of the involucre linear-lanceolate, acute, scarious, diaphanous: flowers pale yellow, pappus scarcely tawny, of numerous fine unequal bristles; young achenes silky, the mature not seen. Collected by C. G. Pringle, on hills above Oaxaca, altitude 5,500 feet, 16 November, 1894, no. 6048. A species anomalous in its spicate-paniculate inflorescence but with the other characters of *Bigelowia*.

Lagasca tomentosa. Rather stout: stem subsimple, terete,

tomentose, also somewhat glandular and villous, purplish: leaves ample, ovate, acuminate at the apex, acute at the petiolate base, dentate, tomentose on both surfaces, pale beneath, 3 to 5 inches long, nearly $1\frac{1}{2}$ to 2 inches broad, scabrous on the margins: petioles 4 or 5 lines long, densely pubescent: inflorescences enveloped in ovate-lanceolate acuminate pubescent and ciliate bracts (6 to 8 lines long, 2 to 3 lines broad): involucres numerous, closely aggregated, villous, 3 lines in length, 1-flowered, unequally dentate, glandular in lines: corolla long, 6 lines in length, externally pubescent, the ampliate cylindrical throat exceeding the limb and the more slender proper tube: mature achenes not seen. — Collected by E. W. Nelson between Ayusina and Petatlan, Guerrero, altitude 5,000 to 7,000 feet, 14 December, 1894, no. 2121.

Trigonospermum tomentosum. Stout branching pubescent herb: stem terete, brownish or dark colored: leaves rhombic-ovate, 3-nerved from above the abruptly contracted then cuneately narrowed base, serrulate, acuminate, green and becoming scabrous above, paler and densely tomentose beneath, including the narrowed petiole-like base, 4 to 8 inches long, half as broad: inflorescence a much branched corymbose panicle, densely covered with short dark glandular-tipped hairs; bracts subulate: heads half inch in diameter: involucral scales about 2-seriate; the outer oblong, acutish, 3-nerved, ciliated; the inner broadly obovate, abruptly acuminate: ray-flowers 5; ligules broad, reversed-deltoid, deeply 3-lobed, bright orange-yellow, $3\frac{1}{2}$ lines long; disk-flowers about 25, concolorous: chaff hyaline, obovate-cuneate to suborbicular, ciliated. — Collected by E. W. Nelson on the western slope of Mt. Zempoaltepec, Oaxaca, altitude 7,700 to 8,000 feet, 5 to 13 July, 1894, nos. 610, 617, and later between Panixtlahuaca and Jaquila, altitude 1,000 feet, 26 February, 1895.

Montanoa macrolepis. Stem, 3 to 5 feet in height, terete, fuscous, glabrous or somewhat pubescent: leaves opposite, sinuately 3-lobed; the lamina 3 to 5 inches long, 2 to 3 inches broad, very scabrous-pubescent above, somewhat paler and sparsely pubescent or glabrate beneath, 3-nerved above the base, and contracted below to a somewhat toothed wing, which does not quite reach the stem but terminates gradually or abruptly (usually with two rounded auricles), leaving a short naked petiole; lobes undulate-denticulate; the lateral short, broad, blunt or again subbilobed; the terminal ovate, obtuse, acutish or even acuminate: heads rather few and large, cymose-corymbed, individually pedunculate or grouped by 2's or 3's at the ends of the branches: involucral scales subbiseriate, oblong, obtuse or rounded at the apex, $3\frac{1}{2}$ lines long: ray-

flowers 10–12; ligules 6 lines long, 2 to 3 lines broad; disk-flowers numerous, with the tube about a third as long as the amplified throat: fruiting heads globose, $1\frac{1}{4}$ inches in diameter; achenes 2 lines long: chaff lanceolate-attenuate, straight-pointed or nearly so, puberulent or almost glabrous except the strong ciliation of the margins, 4 to 5 lines long in anthesis, becoming 8 lines long in fruit. — Collected by C. G. Pringle, in gulches of hills of Las Sedas, Oaxaca, altitude 6,000 feet, 29 September, 1894, no. 4932, also by L. C. Smith, at Nacaltepec (Salomé), Oaxaca, altitude 6,500 feet, 21 September, 1895, no. 818.

Montanoa Rosei. Shrub 8 or 10 feet high: leaves opposite, slender-petioled, rhombic-ovate, serrate, not lobed, acuminate at the apex, cuneate at the base, rather harsh in texture, scabrous and somewhat rugose above, scarcely paler, finely pubescent and glandular-dotted beneath, 3 to 4 inches long, half as broad: corymbs ample: bracts linear: involucral scales lance-attenuate, sub-uniseriate, silky-villous, $2\frac{1}{2}$ to 3 lines in length: disk-flowers about 4, with tube slender, nearly equalling the throat; rays about 3, about 2 lines in length: chaff densely fulvous-woolly. — *Montanoa (Enocoma)* sp., Rose, Contrib. U. S. Nat. Herb. i. 103. — Collected by Dr. E. Palmer, at Alamos, W. Mexico, 26 March to 8 April, 1890, no. 394.

Viguiera Nelsonii. Stem terete, densely silky-villous with white subappressed hairs: leaves attenuate at both ends, sessile, 3-nerved from above the base and pinnately veined, appressed silky-villous upon both surfaces, more densely so and paler beneath, 3 to 6 inches or more in length, $\frac{1}{2}$ to $1\frac{1}{4}$ inches in breadth: heads 12 to 20 in number, 12 to 18 lines in diameter, borne in a terminal corymbose panicle; the individual peduncles an inch or two long: involucral bracts 2–3-seriate, narrowly oblong-lanceolate, silky-villous especially near the margins: somewhat thickened at the base; the tips lax and spreading: rays about 10, orange-yellow, oblong, slightly 2–3-toothed at the apex, 6 to 8 lines in length: disk-flowers more than 50, concolorous: chaff carinate, with strong midrib excurrent as a spreading tip: achenes somewhat compressed and inconspicuously 4-angled, appressed-villous: pappus of two aristæ somewhat broadened at the base, and intermediate squamellæ two on each side, ovate, ciliate-fringed. — Collected by E. W. Nelson, between Chilapa and Tixtla, Guerrero, altitude 5,200 to 7,000 feet, 17 December, 1894, no. 2169, and by L. C. Smith in mountains of Huitzo, Oaxaca, altitude 6,500 feet, 16 November, 1895, no. 899. As to character of achenes a dubious intermediate between *Viguiera* and *Encelia*, but in habit approaching more closely species of the former genus.

Verbesina Nelsonii. Stout, apparently herbaceous: stem striate-angulate, puberulent under a lens, internodes entirely wingless or with a broadish irregular deciduous corky wing near the summit: leaves green and glabrous on both surfaces, oblong, acuminate, pinninerved, crenate-serrate, 6 to 8 inches long, $1\frac{1}{2}$ to 2 inches broad, below the middle slightly narrowed and somewhat crisped or undulate; the base broadly auriculate and amplexicaul, midrib prominent beneath, pale: heads numerous, of medium size, 4 to 5 lines in diameter, in a very dense terminal compound corymb; bracts oblong, small, scarcely herbaceous: pedicels tomentulose: involucre campanulate; scales about 10, subuniserrate, oblong, obtusish, 2 lines long; ray-flowers 4 to 6; ligules very small, yellow, 2 to $2\frac{1}{2}$ lines long, nearly a line in breadth: chaff obovate, mucronate, pubescent on the outer surface especially on the prominent keel: achenes a line long, hispidulous, with conspicuous wing on each edge, awns subequal.— Collected by E. W. Nelson, between Ayusinapa and Petallan, altitude 5,000 to 7,000 feet, 14 December, 1894, no. 2118.

Verbesina Smithii. Branching shrub: branches glabrous, wingless, covered with a pale grayish cortex roughened with numerous lenticels: branchlets gray-tomentose: leaves alternate, lanceolate, attenuate at both ends but obtusish and mucronulate at the apex, rather shallowly serrate-dentate except at the cuneate short-petioled base, bright green and scabrous-puberulent above, white-tomentose beneath, 3 to 4 inches long, 10 to 14 lines broad: heads small, 2 lines high, 3 lines broad, not very numerous in small terminal corymbs; these 2 inches in diameter not exceeding the surrounding leaves: bracts small, grayish-tomentose as well as the pedicels: involucral scales about 3-seriate, elliptic-oblong, obtuse, green, pubescent on the outer surface, ciliated, a line long: disk-flowers 30 to 35; ray-flowers about 8; ligules yellow, $1\frac{1}{2}$ to 2 lines long; chaff obovate, obtusish, yellow toward the summit, puberulent on the outer surface: achenes (immature) distinctly winged on each side; awns 2, slightly unequal.— Collected by L. C. Smith, at Jayacatlan, Oaxaca, altitude 4,500 feet, 10 September, 1894, no. 132.

Verbesina trilobata. Stems 5 to 10 feet in height, branched, glabrous, lucid, wingless, covered with light colored cortex: leaves opposite, decussate, rhombic in general outline, strongly 3-lobed, denticulate, gradually narrowed to a sessile base, scabrous-puberulent above, grayish-tomentose beneath, subpalmately and rather obscurely 3-5-nerved from considerably above the base and reticulate-veined; terminal lobe elongated, ovate to oblong-lanceolate, acuminate; the lateral much shorter and rather blunt; sinuses rounded: corymbs much

branched, terminal, leafy-bracted at the base; bracts oblong-lanceolate, acute; pedicels finely grayish-tomentulose; heads rather small, numerous, radiate, few-flowered; involucral scales about 3-seriate; the outer considerably shorter, linear-oblong, obtuse, 1 to $1\frac{1}{2}$ lines long with subherbaceous tips; inner scales subscarious, about 3 lines long, a line broad, acute, glabrous, except the ciliolated margins: disk-flowers about 12; corollas glabrous; ray-flowers 2 to 3; ligules golden-yellow, $3\frac{1}{2}$ to 4 lines long: mature achenes 2 lines long, conspicuously winged on each margin, hispidulous on the surfaces; awns subequal. — Collected by C. G. Pringle, in rocky gulches, Monte Alban, Oaxaca, altitude 5,600 feet, 15 August, 4 October, 1894, no. 4875.

Verbesina variabilis. Shrub: branches striate-angled, mostly wingless and nearly glabrous: branchlets hoary-puberulent or glabrous, usually bearing narrow irregular deciduous brown corky wings decurrent from the bases of the petioles: leaves alternate, short-petioled, ovate or lance-oblong, sharply and finely serrate or mucronulate-denticulate, acute to shortly acuminate at the apex, cuneately narrowed at the base, 2 to 3 inches long, 9 to 12 lines broad, above green, strigillose-puberulent and very scabrous to nearly smooth; below scarcely paler, soft-pubescent on the pinnate and reticulated veins or quite glabrous: heads of middle size in terminal subsimple or compound corymbs, pedicels grayish-tomentose to merely puberulent: involucral scales about 2-seriate, green, oblong, obtusish; ray-flowers 10 to 12, yellow; ligules 6 lines long, about 2 lines broad, finely 2-3-dentate at the apex; disk-flowers about 60, pubescent: chaff cuneate, the apex truncate with short recurved apiculus: achenes very narrowly winged on both margins, about $1\frac{1}{2}$ lines long: awns 2, subequal. — Collected in three rather different forms, which, however, appear to have no satisfactory specific differences. The first, which may be regarded as the typical form, has rather broad dull green very pubescent leaves. It was collected by C. G. Pringle, Sierra de San Felipe, altitude 9,500 feet, 24 September, 1894, no. 4918, by E. W. Nelson, 18 miles southwest of the city of Oaxaca, altitude 7,500 to 9,500 feet, 10-20 September, 1894, no. 1393, and by C. Conzatti on Sierra de San Felipe, altitude 9,000 feet, 29 November, 1895, no. 31. A second form collected by Mr. Nelson on the top of the Sierra Madre near Chilpancingo, Guerrero, altitude 9,000 to 10,200 feet, 24 December, 1894, no. 2240, differs only in having narrower oblong leaves, which are somewhat lucid above and somewhat less pubescent. A third form, secured by Mr. Nelson at same place and date, no. 2215, has narrow oblong leaves, which are quite glabrous

beneath, and slightly lucid but finely scabrous-puberulent above. The species, to judge from characters, must be near *V. Seemannii*, Schz. Bip.

Dahlia tenuis. Root a cluster of 6 or 8 stout fibres, each enlarged and tuberiform in the middle: stem single, erect, very slender, 1 to $2\frac{1}{2}$ feet high, simple below, covered with a short and dense pubescence, almost tomentulose: leaves small for the genus, pinnate to bipinnate, somewhat deltoid in general outline, on slender divaricately spreading petioles of nearly their own length; leaflets lanceolate, acute or acuminate at both ends, finely and sharply serrate or irregularly 2-3-lobed, green and nearly or quite glabrous above, pale and finely pubescent beneath, 8 to 12 lines in length, 3 to 4 lines in breadth: heads few and subcorymbose, or even solitary, including the rays $1\frac{1}{2}$ to 2 inches in diameter: outer involucre of about 6 narrow thickish obtuse bracts, reflexed during anthesis; the inner scarious bracts lance-oblong, about 6 lines in length: rays about 8, pistiliferous. — Collected by E. W. Nelson, 18 miles southwest of city of Oaxaca, altitude 7,500-9,500 feet, 10 to 20 September, 1894, no. 1364; also by C. G. Pringle, Sierra de Clavellinas, altitude 9,000 feet, 27 October, 1894, no. 5807; and by L. C. Smith, on mountains of Telixtlahuaca, altitude 7,500 feet, 27 July, 1895, no. 481.

Flaveria vaginata. Perennial with stout lignescent root: stems several, ascending from a decumbent or even prostrate somewhat branched base, terete, striated, purplish, with biliniate short grayish woolly pubescence, leafy above, naked below except for the persistent and sheathing bases of the fallen leaves: internodes very short: leaves linear-subulate, clasping at the base, very gradually attenuate, often fascicled in the axils 1(-3)-nerved, rather pale green, finely ciliated toward the base: heads small, closely aggregated into terminal solitary or corymbose-panicle glomerules; these simulating the normal involucrate heads of the order: glomerules 6 to 8 lines in breadth, subtended by a few short recurved foliaceous bracts, and containing 30 or more heads: involucral scales 3 to 4 in each head, hyaline: ray-flower solitary, conspicuous, $2\frac{1}{2}$ lines long, with oblong slightly 2-3-toothed yellow ligule: disk-flowers 5 to 7, yellow: achenes black, lucid, about 10-nerved. — Collected by E. W. Nelson between Coixtlahuaca and Tamazulapam, Oaxaca, altitude 7,000 to 7,700 feet, 12 November, 1894, no. 1933.

FLORESTINA PEDATA, Cass. With this species, *Schkuhria glomerata*, Rob. & Seaton, based on Mr. Pringle's nos. 4289 and 5006, and published in Proc. Am. Acad. xxviii. 109, is identical.

Florestina platyphylla. Mr. Pringle's no. 4975, collected on Monte Alban, Oaxaca, and described in the Am. Jour. Sci. ser. 3, L. 156, as *Schukhria platyphylla*, appears upon further examination to be better placed in *Florestina*.

DYSODIA SERRATIFOLIA, DC. A specimen collected by L. C. Smith, below Jayacatlan, at 3,500 feet altitude, 9 February, 1895, corresponds with Ghiesbreght's no. 519, and with a fragment of the type from the De Candollean Herbarium, in all respects, except in having the leaves mostly alternate, not opposite as hitherto described. The uppermost only are subopposite.

LIABUM GLABRUM, Hemsl. (Biol. Cent.-Am. Bot. ii. 232). This showy species, originally collected by Bourgeau, no. 1401, at Cuernavaca, in 1865, has now been rediscovered by Mr. Pringle in the same locality. His excellent specimens show the flowers to be bright orange-yellow and the leaves normally attenuate. Mr. Pringle notes that the plant attains a height of 15 feet.

Liabum Pringlei. Half shrub, 3 or 4 feet high: stems terete, fuscous-tomentulose: leaves opposite, ovate, acute, mucronulate-denticulate, green and puberulent above, densely white-tomentose and reticulated with brownish veins below, rounded and 3-nerved at the base, 3 inches long, two thirds as broad; margins revolute; naked petioles but 2 lines long: heads few, large, $1\frac{1}{4}$ inches in diameter, discoid: involucre campanulate, multiseriate; scales pale brown (in dried state), lanceolate, attenuate, slightly sericeous: flowers about 75 in a head, yellow, 10 lines in length: achenes $2\frac{1}{2}$ lines long, sericeous: pappus of elongated stramineous bristles and very short outer scales. — Collected by C. G. Pringle, on mountains near Lake Chapala, Jalisco, altitude 7,000 feet, 18 October, 1895, no. 6215.

Cacalia peltata, HBK., var. *Conzattii*. Stem 1 to 3 feet high: inflorescence lax, 1-20-headed; heads 25-40-flowered; involucre 12-phyllous; calyculate, scales covered with a densely spreading pubescence. — Collected by Professor C. Conzatti on the Sierra de San Felipe, Oaxaca, altitude 9,000 feet, 29 November, 1895, no. 27; also by C. G. Pringle in the same region, altitude 10,000 feet, 13 December, 1895, no. 6238.

Senecio prionopterus. Erect herb, 1 to 3 feet in height: stems somewhat flexuous, green, striate, slightly flocculose, rather broadly and interruptedly winged by the decurrent bases of the leaves, simple to the corymbose-paniculate flat-topped inflorescence: leaves lance-oblong, attenuate to a very sharp narrow apex, irregularly serrate-dentate, half inch

broad, 3 or 4 inches long, glabrate above, floccose-tomentulose beneath, not narrowed at the base but decurrent upon the stem for nearly two inches in two broad wings, these sharply toothed especially near the lower end: bracts lance-linear: pedicels spreading, 4 to 15 lines in length, bearing several subulate bractlets: heads about 50, erect, half inch long and including the 8 or 10 spreading oblong golden-yellow rays, about 9 lines in diameter: involucre calyculate, about 20-phyllous; scales attenuate; disk-flowers 40 to 45, shortly 5-dentate: ligules 3 to 3½ lines long, 1 to 1½ lines broad, 4-nerved. — Collected by C. G. Pringle, on hills, at Las Sedas, Oaxaca, altitude 6,000 feet, 3 December, 1895, no. 6282.

Gochnatia Smithii. Shrub? leaves clustered near the ends of the branches, oblong, entire, obtuse, cuneate at the base, thickish, grayish and covered with a very fine short tomentum above (perhaps later glabrescent), much paler, tomentose and veiny beneath: heads in numerous slender close terminal globose glomerules, 8 lines long, about 6-flowered; involucres green, very slender, and gradually turbinate; the scales in many (8 to 10) series, extending as it were down upon the pedicels, ovate to lanceolate, obtuse, pubescent: style-branches short, flattened, rounded: divisions of the corolla subequal, narrow: achene subvillous, 1½ to 2 lines in length. — Collected by L. C. Smith, on hills of Cuicatlan, 30 April, 1895, at 3,000 feet altitude; also by E. W. Nelson along road from Totolapa to San Carlos, altitude 3,000 to 3,800 feet, April, 1895, no. 2546. Noteworthy for its very long slender closely imbricated involucres and globose inflorescences, the latter about 2 inches in diameter.

Perezia Cuernavacana. Glabrous: stems clustered, 2 to 3 feet high, striate-angulate, purplish, leafy: leaves oblong, obtuse and mucronulate at the apex, scarcely narrowed to the rounded subsessile base, sharply denticulate with pungent teeth, reticulated and lucidulous on both surfaces, 2 to 2½ inches long, 9 lines broad, ascending, imbricated, the uppermost gradually reduced: heads few, very large, about 30-flowered, 12 to 15 lines long and broad, terminal on long many-bracted peduncles: involucre turbinate, multiserial; the scales greenish, silky-ciliate, the inner ones oblong, obtusish, 1½ to 2 lines broad near the summit, the outer gradually smaller and extending as subulate spreading bracts some distance down the peduncle: corollas lilac in dried state, 9 lines in length: pappus tawny; achenes puberulent, 3½ lines long. — A handsome species collected by C. G. Pringle, at Cuernavaca, altitude 7,000 feet, no. 6196.

Perezia umbratilis. Habit of *P. nudicaulis*: root horizontal, sending off numerous stout fibres; caudex multicarpital, tufted with sordid

white wool: leaves all radical, runcinately pinnatifid, glabrous or nearly so, petioled, thin, acutish; lobes 5 to 7, mucronulate-dentate: stems about a foot high, slender, dark colored, quite smooth, bearing a few scattered minute appressed subulate bracts and at the summit 2 or 3 heads on slender ascending branches: heads 9 lines long, about 18-flowered: scales of the involucre in 5 series, obtuse, flattish (not thickened nor firm in texture), dark colored, ciliated, otherwise glabrous, the inner ones 5 lines long: flowers lilac in dried state, 7 to 8 lines long (including the achenes). — Collected by C. G. Pringle, in shade, at Tomellin Cañon, Oaxaca, altitude 3,000 feet, 1 December, 1895, no. 5966. Closely related to *P. nudicaulis*, Gray, but having a more numerously seriate involucre with thinner flatter scales, and flowers nearly twice as large.

SONCHUS ASPER, Vill. Although so generally distributed as a weed upon waste heaps, etc., this plant does not appear to have been noted in Mexican lists. It has been collected at San Diego, Chihuahua, by Hartman, and near the city of Oaxaca, by Nelson, no. 1353.